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(72) Inventors; and

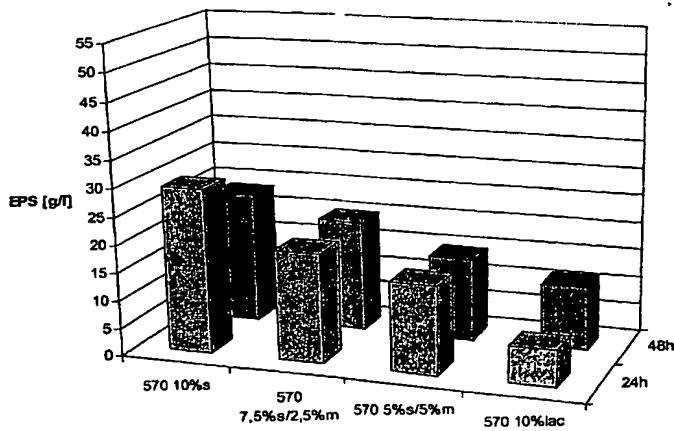
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[Continued on next page]

(54) Title: USE OF LACTOBACILLUS TO PRODUCE EXOPOLYSACCHARIDES IN FOOD AND PHARMACEUTICAL COMPOSITIONS

EPS production by *Lactobacillus sakei* 570 strain in sucrose/maltose and lactose supplemented growth medium.

EPS trend of Lb 570 in sucrose/maltose and lactose media



(57) Abstract: The present invention relates to a composition and a method of preparing or treating food products so as to improve their aroma, flavour, mildness, sweetness, consistency, texture, body, mouth feel, firmness, viscosity, gel fracture, whey off, structure and/or organoleptic properties, nutrition and/or health benefits. In particular, the present invention provides a composition comprising a live micro-organism, an enzyme produced by said micro-organism and an exopolysaccharide (EPS) produced by the activity of said enzyme.

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ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Published:

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

National Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7	C12P19/04	A23C9/123	A23C9/20	A23L1/30	C12N9/10
//C12R1/225					

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12P A23L A23C C12N A23D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94/12656 A (QUEST INT ; DEN BERG DIRK JOHANNES CORNELI (NL); LEDEBOER ADRIANUS) 9 June 1994 (1994-06-09) cited in the application abstract; example 7 page 9, line 15 - line 17 -----	1-5, 7-9, 15-43
X	WO 01/57234 A (AHLGREN JEFFREY A ; SANDINE WILLIAM E (US); KNOSHAUG ERIC P (US); O) 9 August 2001 (2001-08-09) cited in the application the whole document -----	1-4, 15-35, 38-43
Y		5-9, 36, 37 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/03436

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	VAN GEEL-SCHUTTEN G H ET AL: "Screening and characterization of <i>Lactobacillus</i> strains producing large amounts of exopolysaccharides" APPLIED MICROBIOLOGY AND BIOTECHNOLOGY 1998 GERMANY, vol. 50, no. 6, 1998, pages 697-703, XP002260931 ISSN: 0175-7598 the whole document	5-9, 36, 37
X	VAN GEEL-SCHUTTEN, G H ET AL.: "Biochemical and structural characterization of the glucan and fructan exopolysaccharides synthesized by <i>Lactobacillus reuteri</i> wild-type and mutant strains" APPLIED AND ENVIRONMENTAL MICROBIOLOGY, WASHINGTON, DC, US, vol. 65, 1999, pages 53-72, XP002191551 ISSN: 0099-2240 the whole document	1-4, 15-35, 38-43
X	VAN HIJUM, S.A.F.T. ET AL.: "Molecular characterization of a novel fructosyltransferase from <i>Lactobacillus reuteri</i> synthesizing a high molecular weight fructan with beta-(2->1) linked fructosyl units in <i>Escherichia coli</i> " APPLIED AND ENVIRONMENTAL MICROBIOLOGY, WASHINGTON, DC, US, vol. 65, 1999, pages 73-95, XP002264246 ISSN: 0099-2240 the whole document	1-4, 15-35, 38-43
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X	WO 00/47727 A (MAX PLANCK GESELLSCHAFT ; KOSSMANN JENS (DE); KNUTH KAROLA (DE); QUANZ) 17 August 2000 (2000-08-17) the whole document	1-3, 10-17, 19-43
A	EP 0 790 003 A (PURATOS NV) 20 August 1997 (1997-08-20) page 3, line 3 - line 20	
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 03/008618 A (TNO ; VAN GEEL-SCHUTTEN GERRITDINA H (NL)) 30 January 2003 (2003-01-30) examples 1,2,6 -----	1-19, 33-39, 41-43
A	DATABASE WPI Section Ch, Week 200065 Derwent Publications Ltd., London, GB; Class A11, AN 2000-670970 XP002274658 & KR 2000 003 189 A (KIM D M) 15 January 2000 (2000-01-15) abstract -----	
A	ZAHNLEY J C ET AL: "Glycosyltransferase profiles of representative strains of Leuconostoc mesenteroides" FASEB JOURNAL, vol. 11, no. 9, 1997, page A1420, XP001160862 17th International Congress of Biochemistry and Molecular Biology in conjunction with the Annual Meeting; San Francisco, California, USA; August 24-29, 1997 ISSN: 0892-6638 the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/03436

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB 03 03436

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 4-9 completely, and 1-3 and 15-43 partially

Use of Lactobacillus to produce exopolysaccharides in food and cosmetic compositions, and products obtained thereby.

1.1. claims: 1-9 and 15-43, all partially

Use as above, whereby Lactobacillus sakei spp. capable of producing a glucan sucrase is used.

1.2. claims: 1-9 and 15-43, all partially

Use as above, whereby Lactobacillus plantarum spp. capable of producing a glucan sucrase is used.

1.3. claims: 1-9 and 15-43, all partially

Use as above, whereby Lactobacillus salivarium spp. capable of producing a glucan sucrase is used.

2. claims: 10-14 completely, and 1-3 and 15-43 partially

Use of Leuconostoc to produce exopolysaccharides in food and cosmetic compositions, and products obtained thereby.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/03436

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INTERNATIONAL SEARCH REPORT

Information on patent family members

National Application No

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